SECTION 4 RECOMMENDATIONS

The objective of the Union Square Transportation Plan is to craft a plan which creates a more livable urban village by balancing traffic improvements with urban design initiatives, parking improvements and mass transit opportunities. This plan must benefit both neighborhood residents and local business people, while supporting economic development initiatives undertaken by the City to revitalize Somerville's oldest Square.

Through the public participation and city review process, two of the alternatives presented in **Section 3, Alternatives** have been modified in order to advance them to the next level. The third alternative has been dropped from consideration. Specific enhancements to Alternatives 1 and 3 have been incorporated in the following illustrations and the alternatives have been renamed the "two-way street" and "Boulevard" options.

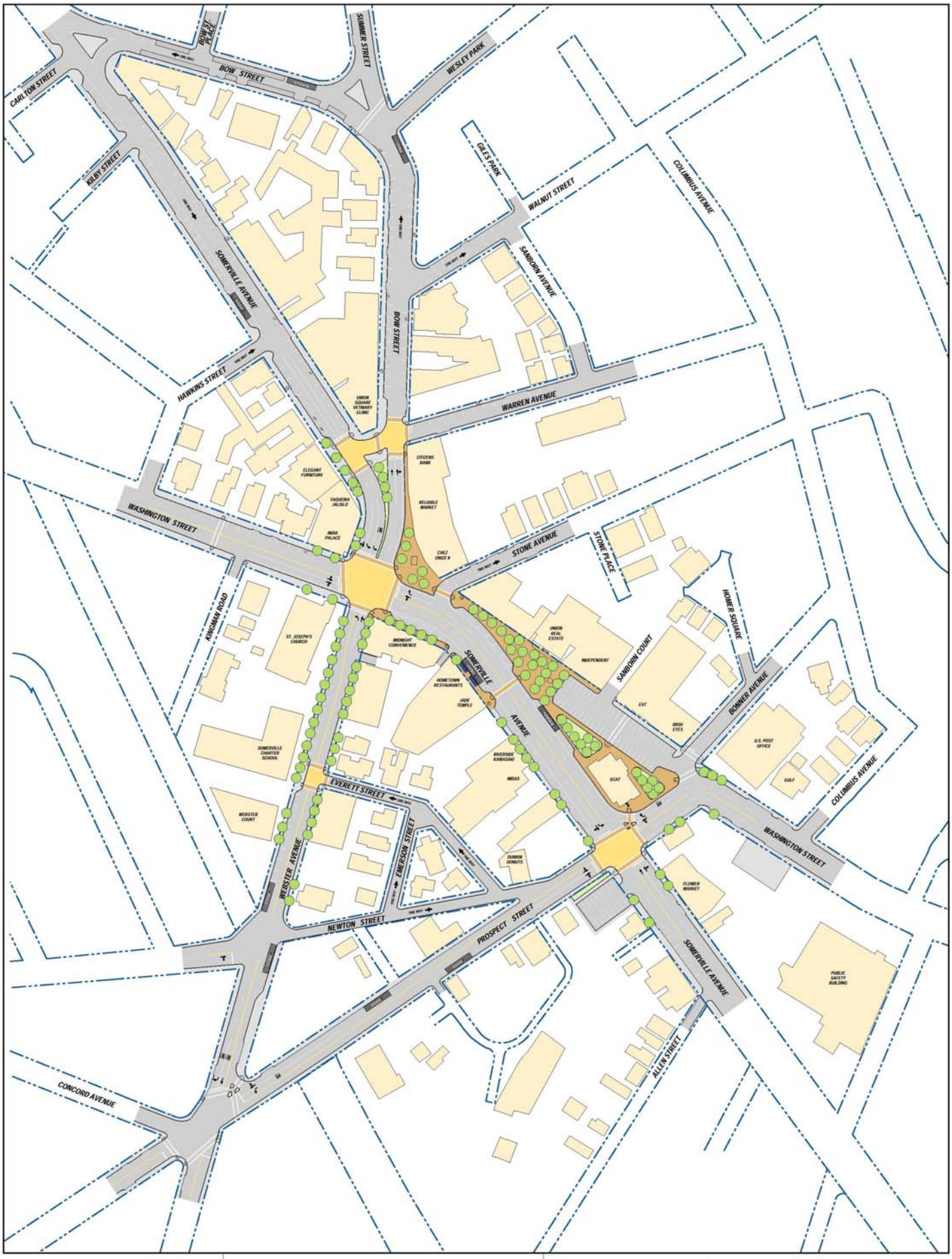
The following presents two options and outlines key traffic, pedestrian/urban design, public transit, and parking considerations. Additional strategies to improve the quality of life in Union Square are also presented. Transportation Demand Management strategies and Transit Oriented Development are two tools available to planners in neighborhoods such as Union Square. The Appendix includes streetscape design guidelines for use in the establishment of a consistent and unified streetscape as the proposed improvements commence.

Options

Two-Way Street Option - The Two-Way Option balances the demand to improve traffic flow through the Square with the needs of local residents and business people to create a pedestrian-friendly urban village. The existing plaza would be retained and redesigned to create a pedestrian-scale and pedestrian-appropriate space for those waiting for the bus or walking to area shops and services. Both Webster Street and Prospect Street would become two-way under this option. Traffic flow on Somerville Avenue within the Square would remain two-way. A coordinated traffic signal would be installed at the entrance/exit to the municipal parking area in the Square (to facilitate the flow of traffic from Bonner Avenue, Washington Street, and the parking lot). Existing one-way patterns on Bow Street and Somerville Avenue (west of the Square) would be retained. Bike lanes and a boulevard could be constructed along this west section of Somerville Avenue to coordinate with design efforts further west of the Square.

Boulevard Option - The Boulevard Option creates a one-way pair of streets in the Square by reopening Washington Street between Prospect Street on the east and the Somerville/Bow/Webster intersection on the west. The new section of Washington Street would serve one-way traffic westbound and Somerville Street would serve one-way traffic eastbound. The existing 42-space municipal lot in the plaza would be eliminated but on street parking would be provided on both sides of each one-way segment. A mid-block raised or textured crossing with curb extensions would improve connections between bus stops since pedestrians would only have to cross one direction of traffic at a time. The remaining plaza island attached to the SCAT building would be retained as an urban village common. A traffic signal would be installed at the new Washington Street / Bonner Street intersection to facilitate left turn movement from Prospect Street to Washington Street. Bonner Street should be considered for right turn only SB.

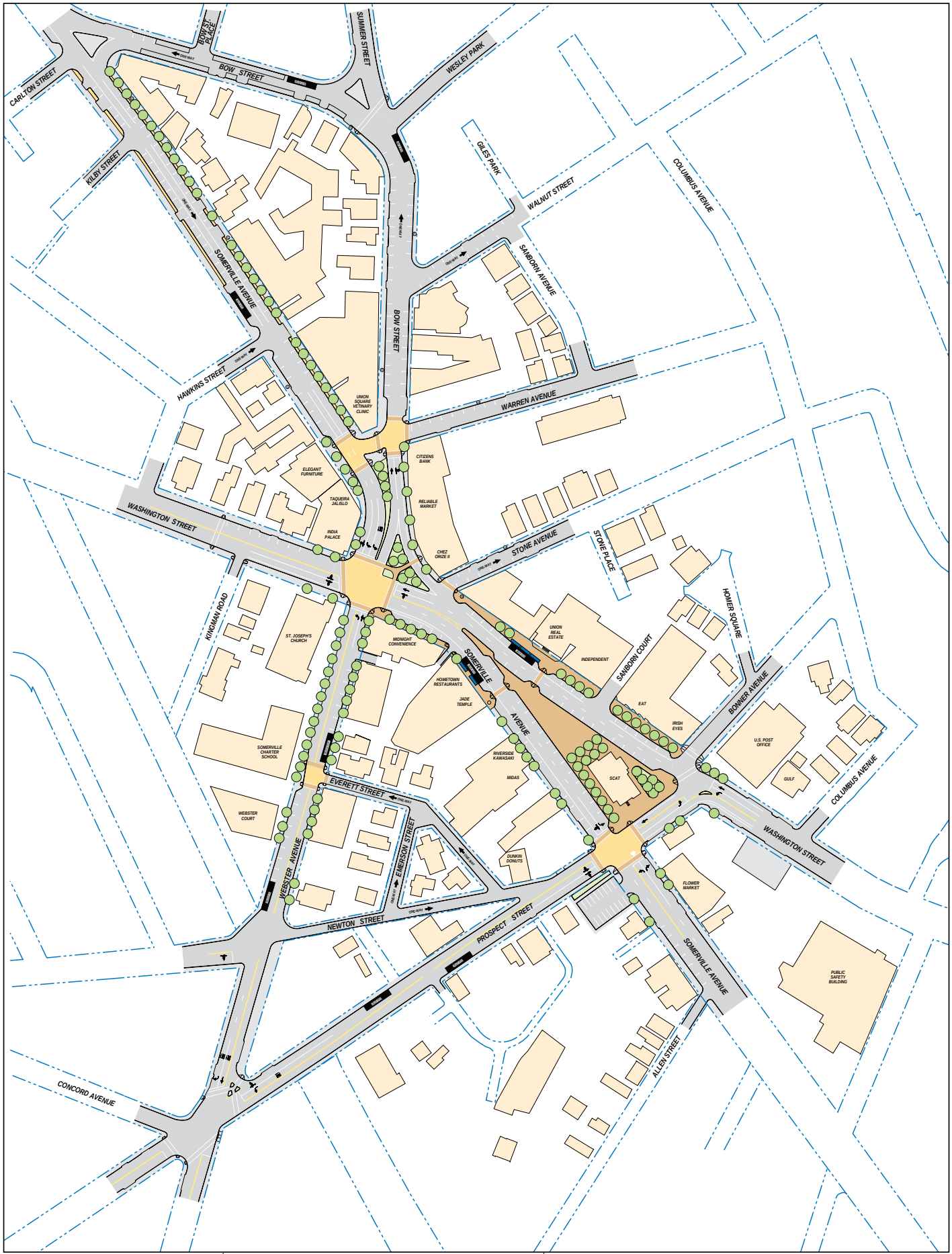
The two recommended improvement alternatives are provided below. These alternatives are a result of public participation and City review.



Edwards AND Kelcey
The Schrafft Center
529 Main Street
Boston, MA 02129

SCALE IN FEET
0 30 60 120 180

Union Square Transportation Plan
TWO-WAY



Edwards AND Kelcey

The Schrafft Center
529 Main Street
Boston, MA 02129

SCALE IN FEET
0 30 60 120 180

Union Square Transportation Plan
URBAN BOULEVARD

Traffic

Both alternatives improve traffic flow in the Square. The intersection near the Vietnam Memorial (Somerville Avenue at Washington Street and Webster Street) would operate better under the Boulevard Option than the Two-way Option. The Two-way Option, however, would operate better at the two intersections at the east end of the Square (near the SCAT building). The projected Level of Service at signalized intersections in the Union Square project area in 2010 is presented in Table 10. As indicated, if no traffic improvements are implemented, traffic flow will be Level of Service F. With the Two-way Option, level of service C is anticipated at major intersections with level of service B at the parking lot entrance by the Post Office. Under the Boulevard Option, the Somerville Avenue at Washington Street and Webster Street would operate at Level of Service B, a significant improvement in traffic flow. By reopening Webster Street and Prospect Street, congestion relating to left-turn movements in the Square would be reduced under both alternatives. Both alternatives assume exclusive pedestrian phases have been converted to concurrent pedestrian crossings.

Table 10 - PROJECTED LEVEL OF SERVICE, 2010

	2010		
Intersection/Movements	No-Build Condition	Two-Way Option	Boulevard Option
Somerville Avenue at Washington Street and Webster Street	F	C	B
Somerville Avenue at Washington Street and Prospect Street	F	C	D
Washington Street at Prospect Street and Bonner Avenue	not currently signalized	B	C
Prospect Street at Webster Street	F	C	D

Under the proposed plan for the new Public Safety Building, the exit for emergency vehicles would be relocated from Somerville Avenue to Washington Street. Of the two recommended alternatives, municipal fire and police departments favor the Boulevard Option (and not the Two-Way option) because it provides more direct access through the Square for emergency response. Under the Two-Way Option, for response west of the Square, emergency vehicles would have to travel west on Washington Street, turn right at the Somerville Avenue / Washington Street / Prospect Street intersection instead of traveling west directly on Washington Street.

Pedestrian/Bicycle Safety

Major objectives of the Union Square Transportation Master Plan are to improve the safety and environment for pedestrians. To achieve these results several generalized recommendations are made to improve the pedestrian environment. A major area of concern is pedestrian crossings. The following recommendations are made:

Crosswalks and Curb Extensions

Pedestrian Crossings should be designed as short as possible by limiting the number of travel lanes to cross and or employing curb extensions. Radii at corners should be minimized where practical to shorten crosswalks. Crosswalks should be demarcated by white lines and be a minimum of ten feet wide. Textured surfaces, such as non-slip bricks or pavers, may raise a driver's awareness through increased noise and vibration. Colored pavers may increase the visibility of the crosswalk, although pavers and bricks typically darken with age and need to be cleaned periodically.

Mid-block crosswalks should be considered only where there is strong demand and adequate sight distance is available. An example of such a mid-block crosswalk would be on Somerville Avenue between Webster and Prospect. Additional pedestrian crossing devices maybe considered such as flashing warning signs or traffic control devices to alert motorists to the presence of pedestrians.

Pedestrian Signals

Pedestrian signals should be incorporated into each signalized location. The use of "count down" pedestrian signals have had positive results in Union Square and should be expanded. The conversion of exclusive pedestrian (all vehicles have red signal indication with no turn on red and pedestrians may cross in any direction) to concurrent crossings (walk indications are displayed where turning conflicts with vehicles may exist, but are controlled in order to reduce pedestrian waiting times) should be incorporated to allow more pedestrian crossing opportunities at each intersection. The concurrent pedestrian movement should be given an leading pedestrian interval (LPI) before the conflicting vehicular phase is allowed to move and right turn on red (RTOR) eliminated at major pedestrian crossings. An LPI is an advance walk signal that gives pedestrians a few seconds head start on vehicles, enabling them to enter crosswalks before the vehicle begin to turn.

Public Transportation

Two-way traffic flow on Webster Street and Prospect Street leads to improved public transit service in Union Square, both now and in the future with construction of a multimodal station on Prospect Street.

Currently five MBTA bus routes stop at 11 bus stops in the project area. By consolidating bus stops to one in the vicinity of Bow and Summer Streets, a pair in the Square, and stops along the Fitchburg rail line on Prospect Street (and at Webster for #91), the efficiency of the system can be improved while still providing adequate accessibility. Proposed stops for the Two-Way Option are presented in the alternative figures. Two bus stop schemes have been considered.

Plaza Emphasis

Plaza emphasis serves five existing stops and one proposed stop: All five MBTA bus routes (CT2, 85, 86, 87, 91) and the senior bus service could be routed through the Square with stops on the north/plaza side and south side of Somerville Avenue. Bus stops on both sides of the street would serve all routes (thereby reducing many of the stops that are currently located outside of the Square). A raised or textured pedestrian crosswalk located midblock on Somerville Avenue in the Square would provide safe access between both bus stops. Several stops within 600 feet of the major bus stop in the Square would be eliminated:

- #85 and #87 bus stop in front of the Reliable Market on Bow Street
- #86 bus stop near the India Palace on Washington Street
- #91 and CT2 bus stop on Webster Street by St. Joseph's Church

The Bow Street/Wesley Park/Summer Street area would be developed as the west node of bus service for local shops, doctors offices, and the adjacent neighborhood. The stop south of Wesley Park on Bow Street would serve both #85 (outbound) and #87; a stop west of Summer Street would serve #85 inbound. Two existing stops for the #87 on Somerville Avenue located near Carlton Street and the Bow/Warren Streets intersection would be consolidated north of Hawkins Street. A midblock crosswalk would provide convenient and safe access across this wide street.

Stops for the #91 and CT2 would be maintained on both sides of Webster Street near Webster Court, Newton Street, and the Fitchburg rail line to serve the Charter School and adjacent residential neighborhood. A stop would be maintained on Prospect Street for the #85 outbound.

Multi-modal Emphasis

Union Square serves six existing stops and one proposed stop. The MBTA has proposed several transit initiatives in Union Square that could affect the service and the location of stops in the area. Urban Ring Phase from McGrath Highway 2 bus rapid transit (BRT) service is proposed to be routed over the Fitchburg commuter rail line, exiting the rail right of way east of Prospect Street and continuing northeast through the Square on Prospect Street to Washington Street or in mixed traffic on Somerville Avenue. Signal preemption is proposed in the Square to facilitate BRT movement (similar to signal preemption at the Public Safety Building). Signal pre-emption would cause an immediate signal change to favor BRT movement. This would adversely affect flow of traffic when the green cycle is prematurely aborted. Delay would result at this and other approaches at that signal and at other interconnected signals. Several signal phases would be required to clear approaches to the intersection of congestion. The impact of BRT in mixed traffic on Somerville Avenue is even more significant, resulting in delays on that roadway that will adversely affect both the quality of transit service and traffic flow.

Design and construction of a multimodal transit facility on Prospect Street could serve as a transfer point for MBTA bus routes #85, 86, 91, CT2 and senior bus service, proposed BRT service, and any future Green Line rapid transit service or potential commuter rail service while providing a convenient 500 to 1000-foot walk to the Square. This multimodal station would also improve access for those living or working in any future multi-use/transit oriented development in this immediate area. The multimodal station would serve economic development initiatives for mixed use transit oriented development proposed by the City of Somerville.

With two-way traffic on Prospect Street, bus stops would be located on both sides of the street. A midblock raised or textured crosswalk would be required to provide safe pedestrian access. Site distance traveling northeast bound on this street is limited by the elevation of the road as it crosses the bridge over the Fitchburg rail line. The midblock crossing must be situated to provide adequate site distance for northeast bound motorists. A stop on Prospect Street northeast bound would serve the #85, 86, 91 and CT2 bus routes. A new stop on Prospect Street southbound would serve the #85, 91 and CT2. Stops would be retained in the Square for the #86 on the south side of Somerville Avenue and for the #85, 86, and 87 on the Plaza side. No stops would be provided on Webster Street.

Similar service to that described above would be developed in the Bow Street/Wesley Park/Summer Street area to serve the #85 and 87 routes. Two existing stops on Somerville Avenue west of the Square would be consolidated north of Hawkins Street for the #85 and 87. A midblock crosswalk would provide convenient and safe access across this wide street.

The Urban Ring Commuter Rail and BRT, even in a dedicated ROW, will not be adequate for the future transit needs of Union Square. A Green Line station in the heart of the square is also essential and is recommended as part of the balanced transportation system for Union Square.

Parking Issues

The availability of sufficient short and long-term parking is important to the economic viability of local shops and restaurants. As indicated in Section 1, a total of 181 spaces are available on street and 137 spaces are available in off-street lots for a total 318 spaces.

Under the Two-Way Option, a net loss of 30 on-street parking spaces would result. Along Somerville Avenue on the plaza side of the Square, metered spaces would increase from three to six. The majority of decreases would occur on the south side of Washington Street where 11 on street parking would be eliminated between the Hawkins Street intersection and Webster Street. Four would be eliminated on the west side of Somerville Avenue between Carlton and Hawkins Streets for a new bus stop and curb extensions to improve pedestrian/bicycle safety. On Bow Street between Summer Street and Somerville Avenue the number of spaces would be reduced from 15 to 13 to accommodate a bus stop. On Bow Street between Warren Avenue and Walnut Street, on street parking would increase from six to seven. On Webster Street on street parking would be relocated from the east side to the charter school side on the west with a decrease from the existing 18 spaces to 14 spaces to accommodate curb extensions for a pedestrian crosswalk to Everett Street and a bus stop at Newton Street. The number of spaces in lots would not be affected (137).

Both the Two-way Option and the Boulevard Option have similar parking layouts with the following exceptions:

- On street parking on Webster Street would be located on the east side north of Everett Street and on the west side between Newton and Everett Streets.
- Although the municipal lot within the Square would be eliminated, a total of 49 on street parking spaces would be available on both sides of the one-way sections of Somerville Avenue and a reconnected section of Washington Street. Currently 43 spaces are available in the lot and 15 spaces are available on both sides of Somerville Avenue. A net loss, therefore of nine spaces would result with implementation of the Boulevard Option compared to the existing while the Two-Way Option would increase the number of spaces in this area by three.

In summary there were 318 parking spaces inventoried in the Union Square study. The two-way option results in a total of 288 spaces remaining, a net loss of 30. The urban boulevard option results in 294, a net loss of 24 spaces.

It is recommended that metered spaces be installed on Bow Street between Summer Street and Somerville Avenue to encourage turnover of spaces. Currently these spaces are used for long-term parking by many different people including employees, area residents, and commuters catching the bus, among others.

Transportation Demand Management

Transportation Demand Management (TDM) is a management plan that cities, neighborhoods, downtown districts, private companies and other entities use to manage traffic congestion and reduce the impacts from increasing traffic on roads that are already at or close to capacity. TDM measures give commuters significant options to driving alone to work and they also benefit the environment by removing single occupant vehicles from the road, which contribute to traffic congestion and poor air quality.

TDM strategies provide commuting options and benefits for workers to encourage reduced vehicle trips and include the following:

- carpool / vanpool
- staggered work hours (flextime)
- transit pass sales on site
- transit subsidies
- transit vouchers
- guaranteed ride home
- secure bicycle parking
- preferential parking for HOV
- telecommuting
- parking management plan

The City of Cambridge has developed a trip reduction ordinance that requires any developer that generates greater than 25 parking spaces to meet certain mitigation criteria to reduce impacts to traffic flow. The City of Somerville may implement a similar strategy in the Union Square neighborhood to encourage TDM implementation and focus developers to take transportation problems as a critical component to new development.

Transportation Management Associations (TMA) are private non-profit groups formed to facilitate private sector involvement in addressing transportation issues including traffic congestion, parking supply, and alternative modes of transportation. Twelve TMA's operating in Massachusetts assist residents with commuting options to Boston and other metropolitan areas. These groups plan and implement the strategies listed above to assist their companies and the community with transportation related issues.

Caravan for Commuters is a state operated transportation agency that works to develop private / public partnerships such as TMA's to enhance the overall commute to Boston, by reducing the impact to traffic congestion, motor vehicle delay, and air pollution. Caravan will work with local employers to set up TDM strategies that can be implemented in the work place.

Transit Oriented Development

Development of a multimodal station on Prospect Street would create a new gateway to Union Square. To ensure that development in this area (especially in underdeveloped parcels along the rail line) is compatible with the station and the City's economic revitalization initiatives, the City of Somerville has an opportunity to direct the pattern development through pro-active zoning amendments. These zoning changes should encourage mixed development including ground level commercial use and upper story residential use which discourage dependency on single-occupant vehicles in preference for transit dependence and bicycle connectivity. The vibrancy created by 24-hour occupancy will create a safe and dynamic community.

The following general zoning revisions are recommended.

- Encourage development of a multimodal station to accommodate seven existing MBTA and Senior Shuttle bus routes, future Bus Rapid Transit, and possible Green Line extension.
- Encourage development and investment to ensure that environmentally and culturally sensitive areas (including historic areas, neighborhoods, and significant institutional structures such as churches and schools) do not go into disrepair.
- Ensure sensitive design and development that is reflective of the character and culture of the Square and the City as a whole.
- Designate between ¼ and ½ mile radius from the transit stop as a transit overlay zone.
- Designate areas for high density residential (this would typically include multi-family housing, apartments or condominiums.) Zone for high-density residential areas within walkable distance of the multimodal station.
- Maximize visual pedestrian-scale corridors between the proposed station and public areas including the plaza in Union Square.
- Minimize parking within the transit zone. Decrease parking requirements to encourage compact development needed to support a walkable, transit focused community. Minimizing parking requirements should only be implemented if accompanied by significant transit improvement.
- Reduce parking by identifying existing lots that can be shared. Lots to the rear of Union Square businesses could be used for restaurant parking at night.
- Institute rideshare programs for employees of local businesses.

Future Public Transportation

Both the MBTA's Urban Ring and extension of the Green Line from Lechmere to Medford would affect transportation alternatives for Union Square residents. A commuter rail stop on either the Fitchburg line on Prospect Street or the Lowell line at Washington Street/McGrath Highway would increase transit alternatives.

In the short term (2010) current proposals for public transportation alternatives contained in the Urban Ring Project for Union Square consist of improved cross town bus service (CT 2 and CT 8 Routes) and a bus-rapid transit service, BRT3. The daily ridership forecasts contained in the Urban Ring Major Investment Study indicate approximately 7350 riders are expected to use the CT 2 and CT 8 bus services in 2003. By 2010 the ridership should reach 8730 daily riders. A BRT service, which replaces the existing surface bus system, is only expected to attract 8820 daily riders in 2010. Year 2025 daily traffic volume estimates of BRT ridership indicate between 5450 and 10,000 riders will use the transit system, which serves Union Square. Coincidentally, vehicular traffic volumes forecast by CTPS for Union Square in the year 2025, with the Urban Ring in place, only result in minor reductions of street traffic. These projections, although founded in a regional model, would seem to underestimate the potential benefits of a major transit investment for Union Square.

In conclusion, a multimodal transfer facility located adjacent to Prospect Street could serve as a transfer point for cross town bus service, future bus/rapid transit service or a future tie to the subway system if the MBTA extended Green Line service from Lechmere to Union Square. This option would have the potential to effect a greater mode split to public transit from the automobile and to encourage pedestrians to walk to a subway line.

Regional Traffic Schemes

Regional Traffic

The transportation solutions for Union Square were developed cognizant of the potential to divert regional traffic to local streets in Union Square. Union Square abuts several large transportation networks including McGrath Highway and I-93. Somerville itself, is located adjacent to the City of Boston and the City of Cambridge, major attractions for vehicular traffic and jobs in the region. Any improvements in through capacity, has the potential to be in filled by latent demand or a shift in demand from the regional transportation network. To prevent this, the traffic operations plan, signal phasing and timing plans have been developed to act as gateways to the Square to regulate the amount of traffic entering Union Square and prevent congestion from the core square area. Additionally, a major circulation change has been recommended to prevent vehicular trips from unnecessarily travelling on roadways through the square but better directing them to their final destination. The following circulation changes are recommended.

- Both Webster Street / Prospect Street would become two-way.
- Somerville Avenue would become on-way (eastbound) between Webster Street and Prospect Street.
- Washington Street extends westbound from Prospect Street to Somerville Avenue in old alignment.
- Newton Street, Everett and Emerson Street one-way pattern discourages neighborhood cut-through.
- Prospect Hill neighborhood circulation scheme
  - Greenville Avenue, one-way SB.
  - Prospect Hill Avenue, one-way SB.
  - Boston Street, one-way EB between Greenville and Washington.
  - Prospect Hill Avenue, one-way SB between McGrath and Columbus.

In addition, input has been provided to the Washington Street Corridor Project to better define movements at the McGrath Highway / Washington Street interchange to facilitate movements away form Union Square.

Bicycles

Marked bike lanes are incorporated into sections of Somerville Avenue to facilitate bicycle movements throughout the Square. Other treatments for bicycles at intersection could include:

- Combined Bicycle / Right-turn Lane – A standard width bike lane is installed on the left side of a dedicated right-turn lane. A dashed stripe divides the bicycle portion and right-turn portion of the lane. A sign should be installed to instruct motorists and bicyclists of the usage of this type of facility.

Gateways

One of the main goals of the Transportation Plan is to define and develop Union Square's unique identity and establish it as a destination. As such, key entrances to the square should be identified and established as "gateways" into the area. The main routes of transportation into the square under the two proposed alternatives are Washington Street, Somerville Avenue, Webster Street, and Prospect Street. From the east and south, the intersection of Somerville Avenue and Prospect Street acts as a gateway to the square as well as Summer Street at Bow Street. Enhancements at the intersection will reinforce this effect. Pedestrians and motorists traveling from the east of Washington Street first experience the square at the Bonner Avenue intersection. The enhancements propose under both alternatives will help to further establish this area as a gateway to the square as well. From the west, the square is first experienced by either Somerville Avenue or Washington Street. The intersection of Somerville Avenue and Bow Street is ideally located as a western gateway. Furthermore, the intersection of Washington Street and Webster Street establishes the second western gateway for pedestrians and motorists traveling from Cambridge and other points to the west.

Another integral feature of the alternatives is the establishment of a more pedestrian-oriented streetscape environment. To accomplish this, pedestrian-friendly gathering places and "information nodes" should be established. Under the urban boulevard alternative, the sidewalks adjacent to the existing restaurants will be generously widened to accommodate pedestrian traffic and outdoor dinning areas. Establishing a one-way roadway system also allows the creation of a more defined central plaza area. The addition of lawn areas, trees, fountains, and benches will establish the plaza by a pedestrian-oriented environment. Information nodes can be established at key pedestrian path locations, such as the new mid-block crossings on Washington Street and Somerville Avenue. These paved-surface areas will contain informational kiosk, poster boards, newspaper boxes, etc. Under the two-way streets alternative, the existing open space will be redefined to establish the creation of distinct edges. A consistent line of large deciduous street trees extending from Stone Avenue to the SCAT building will define the roadway environment. Within the rows of trees and beyond them towards the existing restaurants, a new, more pedestrian-friendly space will be established. As in the urban boulevard alternative, expanded seating areas for the restaurants is provided, and sidewalk improvements help to identify and define key pedestrian routes. Finally, beneath the rows of trees, lawn areas can be established to soften the plaza and provide areas for rest beneath the canopy of the new trees.

Wayfinding

Urban wayfinding consists of various components of a navigational system for Union Square that direct drivers to specific public parking facilities, but also defines Union Square as a destination with easily understood icons and pedestrian signs that guide visitors to specific areas of interest such as restaurants, businesses, historic areas, public buildings, etc. The wayfinding system consists of various components including:

1. Vehicular directional signage
2. Color coded street name signs
3. Pedestrian pointer signs
4. Parking facility signs
5. Parking facility maps
6. Information kiosks

We recommend that gateway signs be installed at the key entrances to Union Square, helping to establish the square's unique identity. Pedestrian pointer signs and information kiosks should be installed along key pedestrian paths to direct pedestrians to all destinations and parking facilities. Some potential kiosk locations have been identified on the landscaping plans and additional locations should be identified after involving the key stakeholders in the square. Public off-street parking is limited in Union Square at the current time and should be expanded and identified with parking facility signing.

SECTION 5 IMPLEMENTATION PLAN

On May 2, 2002 a final public meeting was held at the Cummings School to present final options and gain consensus for a recommended alternative. Representatives from Edwards and Kelcey made a presentation in which they reviewed the study's issues and goals, reviewed highlights of the previous issues, opportunities and alternatives, and presented a summary of the analyses used to evaluate alternatives and finally presented the preferred alternatives for Union Square.

The two options were presented as follows:

1) Retain Two-Way Somerville Avenue/Existing Parking (modified Alternative 1)
2) Urban Boulevard (Modified Alternative 3)

Both alternatives incorporate the following common elements:

- Two way Webster Street /Prospect Street
- New signals at Bonner Street/Washington Street
- Bike lanes/Pedestrian Crossing Treatments
- New Plaza Design
- Revised Bus Stop Locations
- New Coordinated Traffic Signal System

Each plan was accompanied by a rendered drawing of a new plaza design to highlight the potential streetscape opportunities for each alternative. The alternatives were summarized in terms of traffic operations (LOS) and Parking Impacts, as indicated in Tables 11 and 12.

Table 11 – PREFERRED ALTERNATIVES TRAFFIC PROJECTED LEVEL-OF-SERVICE

	2010		
Intersection/Movements	No-Build Condition	Two-Way Option	Boulevard Option
Somerville Avenue at Washington Street and Webster Street	F	C	B
Somerville Avenue at Washington Street and Prospect Street	F	C	D
Washington Street at Prospect Street and Bonner Avenue	not currently signalized	B	C
Prospect Street at Webster Street	F	C	D